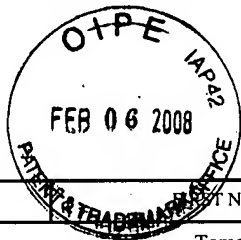




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APPLICATION NO.	FILING DATE	INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,904	03/21/2006	Tomohiro Shinagawa	127425	4744

25944 7590 02/05/2008
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

ALI, HYDER

ART UNIT PAPER NUMBER

3747

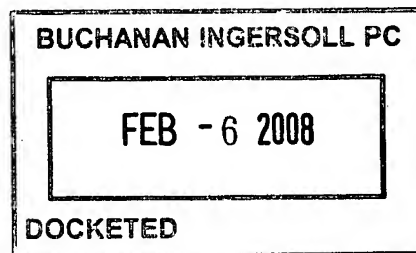
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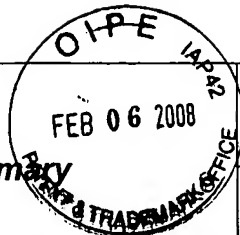
PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



Office Action Summary



Application No. 10/572,904	Applicant(s) SHINAGAWA ET AL.
Examiner HYDER ALI	Art Unit 3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Preliminary amendment filed on 3/21/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 4, 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/26/07 & 6/28/07 & 3/21/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 13, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Cronyn (US 4,318,369).

As to Claim 1, Cronyn discloses a hydrogen-fueled internal combustion engine (12) that operates upon receipt of one or two or more types of fuel that are selected from hydrogenated fuel and a dehydrogenated product and hydrogen, which dehydrogenated product and hydrogen are obtained by dehydrogenating the hydrogenated fuel, the hydrogen-fueled internal combustion engine (12) comprising: a hydrogenated fuel storage section (128, see Fig. 7); reaction means (14) that includes a catalyst that is positioned to be heatable and dehydrogenates hydrogenated fuel, which is supplied from the hydrogenated fuel storage section, on the catalyst that is heated; separation means for separating hydrogen-rich gas and a dehydrogenated product that are derived from dehydrogenation and a dehydrogenated product storage section (130, see Fig. 7) for storing the separated dehydrogenated product. **See col. 3, lines 25-45 and col. 7, lines 27-55.**

As to Claim 6, Cronyn discloses a hydrogen-fueled internal combustion engine comprising: a hydrogenated gasoline tank (20) for storing hydrogenated gasoline

containing an organic hydride; fuel separation means (14) for separating the hydrogenated gasoline into hydrogen-rich gas and dehydrogenated gasoline; and fuel supply means for supplying at least the hydrogen-rich gas and/or the dehydrogenated gasoline on an individual basis or simultaneously, among the hydrogenated gasoline, the hydrogen-rich gas, and the dehydrogenated gasoline, to the internal combustion engine (12) as fuel.

As to Claim 13, Cronyn discloses a hydrogen-fueled internal combustion engine that operates upon receipt of one or two or more types of fuel that are selected from hydrogenated fuel and a dehydrogenated product and hydrogen, which dehydrogenated product and hydrogen are obtained by dehydrogenating the hydrogenated fuel, the hydrogen-fueled internal combustion engine comprising: a hydrogenated fuel storage section (128, see Fig. 7); reaction unit (14) that includes a catalyst that is positioned to be heatable and dehydrogenates hydrogenated fuel, which is supplied from the hydrogenated fuel storage section, on the catalyst that is heated; separation unit for separating hydrogen-rich gas and a dehydrogenated product that are derived from dehydrogenation; and a dehydrogenated product storage section (130, see Fig. 7) for storing the separated dehydrogenated product.

As to Claim 14, Cronyn discloses a hydrogen-fueled internal combustion engine comprising: a hydrogenated gasoline tank (20) for storing hydrogenated gasoline containing an organic hydride; fuel separation unit (14) for separating the hydrogenated gasoline into hydrogen-rich gas and dehydrogenated gasoline; and fuel supply unit for supplying at least the hydrogen-rich gas and/or the dehydrogenated gasoline on an

individual basis or simultaneously, among the hydrogenated gasoline, the hydrogen-rich gas, and the dehydrogenated gasoline, to the internal combustion engine (12) as fuel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-10, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al (US 6,827,047) in view of Cronyn (US 4,318,369) or Fischer et al (DE 19931104).

According to a first embodiment and as shown in FIG. 1, Qian et al discloses a hydrogen-fueled internal combustion engine (1) that operates upon receipt of one or two or more types of fuel that are selected from hydrogenated fuel (2) and a

dehydrogenated product (17) and hydrogen, which dehydrogenated product and hydrogen are obtained by dehydrogenating the hydrogenated fuel, the hydrogen-fueled internal combustion engine comprising: a hydrogenated fuel storage section; reaction means that includes a catalyst that is positioned to be heatable and dehydrogenates hydrogenated fuel, which is supplied from the hydrogenated fuel storage section, on the catalyst that is heated; separation means for separating hydrogen-rich gas and a dehydrogenated product that are derived from dehydrogenation.

According to a first embodiment and as shown in FIG. 1, Qian et al discloses all the limitations of claim 1, except for a dehydrogenated product storage section for storing the separated dehydrogenated product.

The Examiner introduces Cronyn or Fischer et al or **according to a fourth embodiment and as shown in FIG. 4 of Qian et al patent** as the secondary references to show:

Cronyn discloses a dehydrogenated product storage section (20) for storing the separated dehydrogenated product. The dehydrogenated product returned to the storage section 20, to be replaced, periodically, with hydrogenated fuel supply. See col. 1, lines 23-28.

Fischer et al discloses a dehydrogenated product storage section (19) for storing the separated dehydrogenated product. The dehydrogenated product can be mixed with the hydrogenated fuel supply in the hydrogenated fuel tank 1. See Figure 1 and abstract.

According to a fourth embodiment and as shown in FIG. 4 of Qian et al patent discloses a storage tank (46) for temporarily storing the dehydrogenated product, so it

is possible to more promptly respond to the change in the operational state of an engine. **See col. 9, lines 5-20.**

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a dehydrogenated product storage section for storing the separated dehydrogenated product as taught by either Cronyn or Fischer et al or according to a fourth embodiment and as shown in FIG. 4 Qian et al patent in the **first embodiment and as shown in FIG. 1** of Qian et al **since this structure of storage** would promote dehydrogenated product be mixed with the hydrogenated fuel supply and/or since this structure of storage would promote dehydrogenated product to be replace, periodically, with hydrogenated fuel supply and/or since this structure of storage would promote more promptly respond to the change in the operational state of an engine.

As to claim 2, Qian et al discloses according to a first embodiment and as shown in FIG. 1, valves (6, 9, 14, 16) for arbitrarily selecting one or more types of fuel.

As to claims 3 and 5, Qian et al discloses according to a first embodiment and as shown in FIG. 1, a catalyst for promoting the dehydrogenating reaction is provided in the reformer 5. **See col. 4, lines 40-65.** Official notice is also taken that storage section are both made of an elastic resin material were available at the time of the present application. See for example, Prasad et al (US 6,924,054) or Becerra et al (US 7,270,907) or Seery (US 5,038,960) or Hansen (US 3,477,610) for the disclosure of flexible fuel storage. Thus storage section is both made of an elastic resin material are old and well known. Official notice is also taken that a honeycomb carrier is used as a

catalyst carrier were available at the time of the present application. See for example, Abe (US 6,641,795) or Durante et al (US 5,733,518) or Abe et al (US 5,538,697). Thus honeycomb carrier is used as a catalyst carrier are old and well known.

As to claim 6, the claimed limitations of claim 6 are comparable to the rejected claim 1 above. See the rejection of claim 1 above.

As to claims 7-10, the claimed limitations of claim 7 are comparable to the rejected claim 2 above. See the rejection of claim 2 above.

As to claims 13 and 14, the claimed limitations of claims 13 and 14 are comparable to the rejected claim 1 above. See the rejection of claim 1 above.

Allowable Subject Matter

Claims 4, 11, 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prasad et al (US 6,924,054), Becerra et al (US 7,270,907), Seery (US 5,038,960), Hansen (US 3,477,610), Abe (US 6,641,795), Durante et al (US 5,733,518), Abe et al (US 5,538,697) and Shinagawa et al (US 7,089,907).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (571) 272-4836. The examiner can normally be reached on M-F (8:30-5:00).

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Art Unit: 3747

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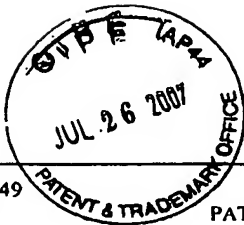
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Kirk Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hyder AZ

ha


STEPHEN K. CRONIN
SUPERVISORY PATENT EXAMINER

Sheet 1 of 1Form PTO-1449
(REV. 1/06)US Dept. of Commerce
PATENT & TRADEMARK OFFICEATTY DOCKET NO.
127425APPLICATION NO.
10/572,904

INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

APPLICANT(S)
Tomohiro SHINAGAWA et al.FILING DATE
March 21, 2006GROUP
1745

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number	Date	Name
/HA/	1	2003/0168023 A1	09/11/2003	Anderson et al.
/HA/	2	4,318,369	03/09/1982	Cronyn

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation
/HA/	3	DE 199 31 104 A1	01/11/2001	GERMANY		
/HA/	4	EP 1 236 679 A2	09/04/2002	EUROPE		
/HA/	5	WO 03/042521 A2	05/22/2003	WIPO		

OTHER DOCUMENTS

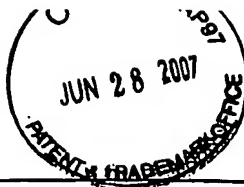
Examiner Initials	Cite No.	(Including Author, Title, Date, Pertinent Pages, etc.)

EXAMINER /Hyder Ali/

DATE CONSIDERED 01/08/2008

Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Date: July 26, 2007

Sheet 1 of 1

Form PTO-1449 (REV. 1/06)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 127425		APPLICATION NO. 10/572,904	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANTS Tomohiro SHINAGAWA et al.			
				FILING DATE March 21, 2006		GROUP 1745	
U.S. PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Name			
FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation	
/HA/	1.	JP-A-2000-291499	10/17/2000	JAPAN	X	X	
OTHER DOCUMENTS							
Examiner Initials	Cite No.	(Including Author, Title, Date, Pertinent Pages, etc.)					
EXAMINER				DATE CONSIDERED			
/Hyder Ali/				01/08/2008			
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Date: June 28 2007

Form PTO-1449 (REV. 1/06)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 127425		APPLICATION NO. New U.S. National Stage of PCT/JP2004/015104	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANTS Tomohiro SHINAGAWA et al.			
				FILING DATE March 21, 2006			

U.S. PATENT DOCUMENTS				
Examiner Initials	Cite No.	Document Number	Date	Name
/HA/	1.	US 5,275,000	1/4/1994	COFFINBERRY ET AL.
/HA/	2.	US 5,373,818	12/20/1994	UNGER
/HA/	3.	US 2003/0168024 A1	9/11/2003	QIAN ET AL.

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation
/HA/	4.	JP A 2000-297706	10/24/2000	JAPAN	X	X
/HA/	5.	JP A 2002-255503	9/11/2002	JAPAN	X	X
/HA/	6.	JP A 1-170752	7/5/1989	JAPAN	X	_____
/HA/	7.	JP B2 3-9091	2/7/1991	JAPAN	X	_____
/HA/	8.	JP B2 5-18761	3/12/1993	JAPAN	X	_____
/HA/	9.	JP A 2001-110437	4/20/2001	JAPAN	X	X
/HA/	10.	JP A 6-159096	6/7/1994	JAPAN	X	X
/HA/	11.	JP A 2003-184667	7/3/2003	JAPAN	X	X
/HA/	12.	JP A 2000-213444	8/2/2000	JAPAN	X	X

OTHER DOCUMENTS		
Examiner Initials	Cite No.	(Including Author, Title, Date, Pertinent Pages, etc.)

EXAMINER /Hyder Ali/	DATE CONSIDERED 01/08/2008
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Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Notice of References Cited	Application/Control No. 10/572,904	Applicant(s)/Patent Under Reexamination SHINAGAWA ET AL.	
	Examiner HYDER ALI	Art Unit 3747	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,089,907	08-2006	Shinagawa et al.	123/295
*	B	US-6,827,047	12-2004	Qian et al.	123/3
*	C	US-6,924,054	08-2005	Prasad et al.	429/34
*	D	US-5,038,960	08-1991	Seery, John T.	220/723
*	E	US-3,477,610	11-1969	HANSEN CLAYTON C	220/495.01
*	F	US-7,270,907	09-2007	Becerra et al.	429/34
*	G	US-6,641,795	11-2003	Abe, Fumio	423/648.1
*	H	US-5,733,518	03-1998	Durante et al.	423/248
*	I	US-5,538,697	07-1996	Abe et al.	422/171
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.